

10 Rec'd

10 4 OCT 2004

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
13 November 2003 (13.11.2003)

PCT

(10) International Publication Number  
**WO 2003/093453 A3**

- (51) International Patent Classification<sup>7</sup>: C12N 15/75, 1/21, C07K 14/32
- (21) International Application Number: PCT/DK2003/000198
- (22) International Filing Date: 25 March 2003 (25.03.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
PA 2002 00534 10 April 2002 (10.04.2002) DK
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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report
- (88) Date of publication of the international search report:  
13 May 2004
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: BACILLUS LICHENIFORMIS MUTANT HOST CELL

(57) Abstract: A *Bacillus licheniformis* mutant host cell comprising a mutation ( deletion ) in one or more genes encoding contaminating native secreted polypeptides (e.g. proteolytic enzymes, nutrient uptake factors and signal molecules), wherein the mutant host cell expresses at least 5% less of the one or more proteases than the parent host cell, when cultivated under comparable conditions. The mutant host cell is used for producing heterologous polypeptides.

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/DK 03/00198

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/75 C12N1/21 C07K14/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, EMBASE, CHEM ABS Data, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 45124 A (GENENCOR INT) 10 September 1999 (1999-09-10) claims 23-25,50,51 ---	1-22
X	EP 0 634 490 A (SOLVAY) 18 January 1995 (1995-01-18) claims 5,6,21,26,29 ---	1-22
X	WO 91 02803 A (HENKEL RESEARCH CORP) 7 March 1991 (1991-03-07) page 1, line 10 -page 2, line 7; claims ---	1-22
X	WO 98 49328 A (JORGENSEN STEEN ;KRISTENSEN TINA (DK); NOVONORDISK AS (DK); HANSEN) 5 November 1998 (1998-11-05) page 4, line 10 -page 5, line 10; claims 1,4,6 --- -/-	1-22

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&amp;" document member of the same patent family

Date of the actual completion of the international search

15 December 2003

Date of mailing of the international search report

13. 01. 2004

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/DK 03/00198

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	XU-CHU WU ET AL: "ENGINEERING A BACILLUS SUBTILIS EXPRESSION-SECRETION SYSTEM WITH A STRAIN DEFICIENT IN SIX EXTRACELLULAR PROTEASES" JOURNAL OF BACTERIOLOGY, WASHINGTON, DC, US, vol. 173, no. 16, August 1991 (1991-08), pages 4952-4958, XP009005082 ISSN: 0021-9193 the whole document ---	1-22
X	EP 0 369 817 A (BIOTEKNIKA INTERNATIONAL) 23 May 1990 (1990-05-23) claims ---	1-22
X	DATABASE GSP [Online] 3 March 1993 (1993-03-03) retrieved from EBI Database accession no. AAR27481 XP002902971 71,6% identity in 806 aa overlap with SEQ ID No: 2. -& WO 92 16642 A (OMNIGENE, INC) 1 October 1992 (1992-10-01) page 1, line 22 -page 2, line 4 page 3, line 12 - line 30; claims ---	1-22
A	WO 02 00907 A (JOERGENSEN STEEN TROELS ;OLSEN CARSTEN (DK); NOVOZYMES AS (DK); AN) 3 January 2002 (2002-01-03) cited in the application claims ---	7,8
P,A	M. CRAYNEST ET AL: "Enhanced secretion of heterologous cyclodextrin glycosyltransferase by a mutant of Bacillus licheniformis defective in the D-alanylation of teichoic acids" LETTERS IN APPLIED MICROBIOLOGY, vol. 37, 2003, pages 75-80, XP002265057 Results ---	3-22
P,A	US 6 423 523 B1 (DETROZ REN EACUTE ET AL) 23 July 2002 (2002-07-23) claims 1-25 -----	3-22

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/DK 03/00198

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

The ISA has carried out a search which relates to invention 1 (SEQ ID No 2) and invention 67 (SEQ ID No 134) mentioned above, corresponding to part of claims 1-22

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1: claims 1-22 (partially).

A *Bacillus Licheniformis* mutant host cell, which is mutated in at least one gene encoding a secreted polypeptide, which polypeptide is at least 80% identical to the polypeptide shown in SEQ ID NO: 2.

Invention 2: claims 1-22 (partially).

A *Bacillus Licheniformis* mutant host cell, which is mutated in at least one gene encoding a secreted polypeptide, which polypeptide is at least 80% identical to the polypeptide shown in SEQ ID NO: 4.

Invention 3: claims 1-22 (partially).

A *Bacillus Licheniformis* mutant host cell, which is mutated in at least one gene encoding a secreted polypeptide, which polypeptide is at least 80% identical to the polypeptide shown in SEQ ID NO: 6.

...etc.

...etc.

...etc.

Invention 122: claims 1-22 (partially).

A *Bacillus Licheniformis* mutant host cell, which is mutated in at least one gene encoding a secreted polypeptide, which polypeptide is at least 80% identical to the polypeptide shown in SEQ ID NO: 248.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

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